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Infectious Disease Mortality in Missouri—1980 to 1995

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Introduction

The spectrum of infectious diseases is expanding and many infectious diseases once thought to be conquered are increasing.[1] Recent events such as a newly discovered *Hantavirus* pulmonary syndrome, foodborne and waterborne outbreaks caused by *Escherichia coli O157:H7*, *Cyclospora* and *Cryptosporidium*, and the currently growing crisis of antibiotic resistance have demonstrated the emergence and reemergence of infectious diseases. The causes for this resurgence are many and complex and include microbial adaptation and change; changes in human demographics and behavior; changes in the environment; the increases in national and international travel; changes in food handling, shipping and processing; and breakdowns in public health measures for previously controlled infections (e.g, cholera, tuberculosis [TB], pertussis).[1]

In addition, overall deaths due to infectious diseases are increasing. In the United States, the death rate due to infectious diseases as the underlying cause-of-death increased 58 percent from 1980 to 1992.[2] Age-adjusted mortality increased 39 percent during the same period.[2] While acquired immunodeficiency syndrome (HIV/AIDS) accounted for many of these deaths, others involved long-recognized killers such as TB and pneumonia.

To address the challenges of emerging infectious disease threats, the Centers for Disease Control and Prevention (CDC) in partnership with state and local health departments, other federal agencies, academic institutions, health care providers, international and public service organizations, has developed a strategic plan, *Addressing Emerging Infectious Disease Threats: A Prevention Strategy for the United States*.[1] Published in 1994, the plan emphasizes the improvement and expansion of infectious disease surveillance; applied research; prevention and control activities; and also proposes to strengthen the public health laboratory infrastructure.[1] The implementation of this plan would result, among other things, in investigations needed to more accurately monitor trends in infectious disease morbidity and mortality.[2] In this report, we evaluated trends in infectious disease mortality for Missouri residents and compared these results with recent documented national trends that show that infectious disease mortality has been increasing for both the United States and for Missouri.

Methods

The current disease classification system, *International Classification of Diseases, 9th Revision* (ICD-9), does not readily allow assessment of the aggregate burden of infectious diseases.[2] Although ICD-9 contains a set of codes (001–139)[3] labeled as infectious diseases, this grouping leaves out many infectious diseases. The ICD-9 places many infectious diseases in non-infectious categories (such as the classification of endocarditis among cardiovascular diseases and the classification of meningitis and middle ear infections among diseases of the nervous system and sense organs, respectively).[1] Fewer than half of deaths directly attributable to infectious diseases are labeled explicitly as infectious in this classification system.[2] Therefore, to assess more accurately the overall burden of infectious disease mortality for Missouri residents, a recoding scheme developed by CDC classifying ICD-9 codes as infectious diseases, consequence of infectious diseases, or not infectious

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diseases was used. This recoding scheme categorized an additional 377 ICD-9 codes as either infectious diseases or consequences of infections. This recoding scheme was used in the national study and was obtained from the National Technical Information Services (order number PB96-500194).[2]

A total of 1,131 codes that in all cases represent either infectious diseases or consequence of an infectious disease, were applied to the Missouri death files for the years 1980 to 1992 (the years of the national study), focusing on the underlying cause-of-death. To obtain more recent estimates for Missouri, the analysis was extended to the year 1995, the most recent year for which final data were available. The total annual number of deaths of Missouri residents coded to each infectious disease ICD-9 recode as the underlying cause-of-death was calculated and stratified by demographic variables. The crude rates of infectious disease deaths were age-adjusted to United States 1980 population.

Results 1980 to 1992

From 1980 to 1992, infectious diseases were the underlying cause-of-death in 37,867 (5.8%) of the 647,411 total Missouri resident deaths.

For Missouri residents, the age-adjusted death rate due to infectious diseases as the underlying cause-of-death increased approximately 28 percent (from 41.6 to 53.2 deaths per 100,000) between 1980 and 1992. See Figure 1. In comparison, the infectious disease age-adjusted mortality for United States residents increased 39 percent for the same time period.[2] See Figure 1. Deaths due to respiratory tract infections, septicemia and HIV/AIDS account for most of this increase for Missouri and the United States. See Figure 2. In Missouri, between 1980 and 1992, the death rate due to respiratory tract infections increased 19.2 percent, from 31.2 to 37.2 deaths per 100,000. The death rate from septicemia increased 89.8 percent, from 4.2 to 8.0 deaths per 100,000 for the same time period. HIV/AIDS deaths increased from none in 1980 to 8.8 per 100,000 in 1992.

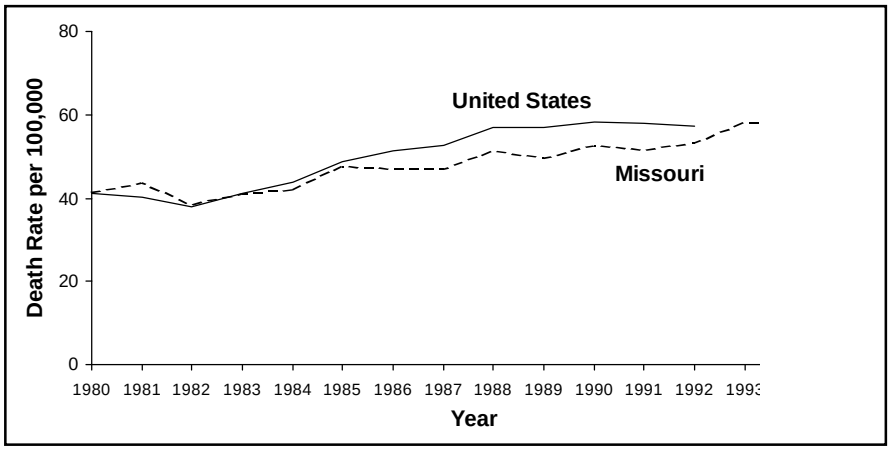

Figure 1. Age-adjusted infectious disease death rates by year, Missouri and United States, 1980–95.

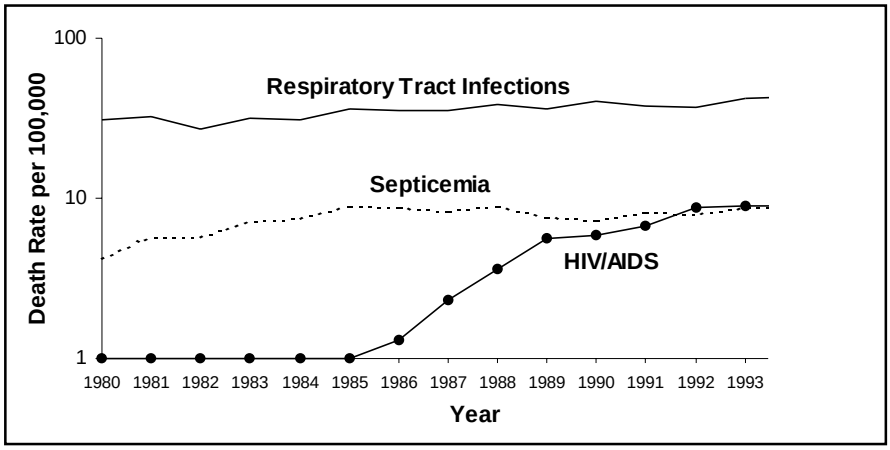

Figure 2. Death rates for selected infectious disease syndromes, Missouri, 1980–95.

From 1980 to 1992, for Missouri and United States residents, there was a decline in the infectious disease death rate among children younger than 5 years.

For Missouri and United States residents, infectious disease mortality was highest among those aged 65 years and older. Between 1980 to 1992, there was a 27 percent increase in the rate of infectious disease deaths (from 289.6 to 368.7 deaths per 100,000) among Missourians ages 65 and over. See Figure 3. For the United States, there was a 25 percent increase in infectious disease death rates for the same time period (from 271 to 338 per deaths 100,000).[2]

The infectious disease death rate is increasing at the fastest rate for ages 25 to 44, for Missouri and the United States, primarily because of HIV/AIDS. Between 1980 to 1992, the rate for this age group increased five fold from 5.6 to 28.3 deaths per 100,000 for Missouri residents. See Figure 3. For the United States, the comparable rate increased from six to 38 deaths per 100,000 for the same time period.[2]

Infectious disease death rates increased in both sexes, from 1980 to 1992, with infectious disease mortality among males higher than among females in practically every age group for Missouri and the United States.

For Missouri residents, the infectious disease death rate in whites increased

about 24.3 percent (from 40.3 to 50.1 deaths per 100,000) from 1980 to 1992. See Figure 4. For African Americans, the infectious disease death rate increased approximately 46.2 percent (from 57.1 to 83.5 deaths per 100,000) for the same time period. See Figure 4. For the United States, the 1992 infectious disease death rate among African Americans was 88 per 100,000; 36 percent higher than for the population as a whole.[2]

Results 1992 to 1995

For Missouri residents, between 1992 and 1995, the age-adjusted death rate due to infectious diseases as the underlying cause-of-death increased an additional 10.3 percent (from 53.2 to 58.7 deaths per 100,000). In 1995, infectious diseases were the underlying cause-of-death for 4,045 (7.5%) of the 54,222 Missouri resident deaths.

From 1992 to 1995, infectious disease death rates among Missouri residents ages 65 and over, increased from 368.7 to 410.5 deaths per 100,000. For ages 25–44, the infectious disease death rate increased an additional 7.4 percent (from 28.3 to 30.4 deaths per 100,000), indicating a slowing of the increase.

During the corresponding time period, the infectious disease death rate among males increased from 70.9 to 75.2 deaths per 100,000. The infectious disease death rate among females increased from 39.1 to 45.2 deaths per 100,000 for this time period.

For the 1992 to 1994 period (the latest year for which rates could be calculated by race), the infectious disease death rate in whites increased from 50.1 to 55.1 deaths per 100,000. For African Americans, the infectious disease death rate increased from 83.5 to 91.6 deaths per 100,000 for the same time period.

Discussion

In summary, the data presented in this report show that infectious disease mortality in Missouri has been increasing since 1980. Missouri findings are similar

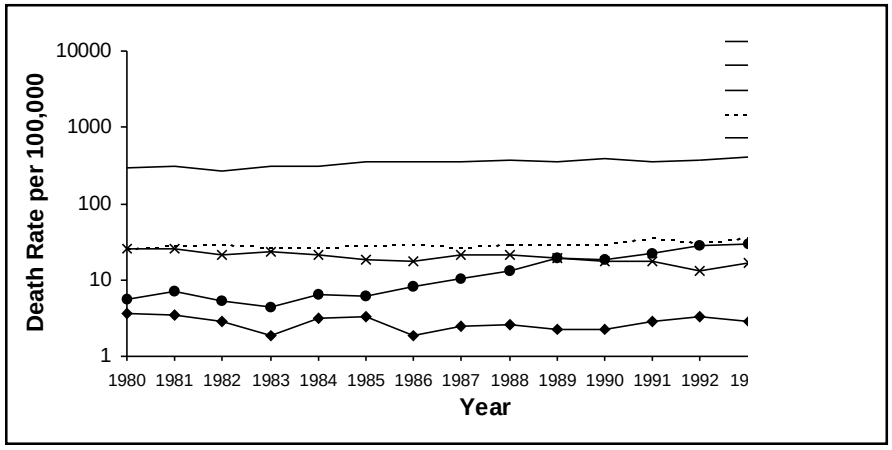

Figure 3. Infectious disease death rates by age group, Missouri, 1980–95.

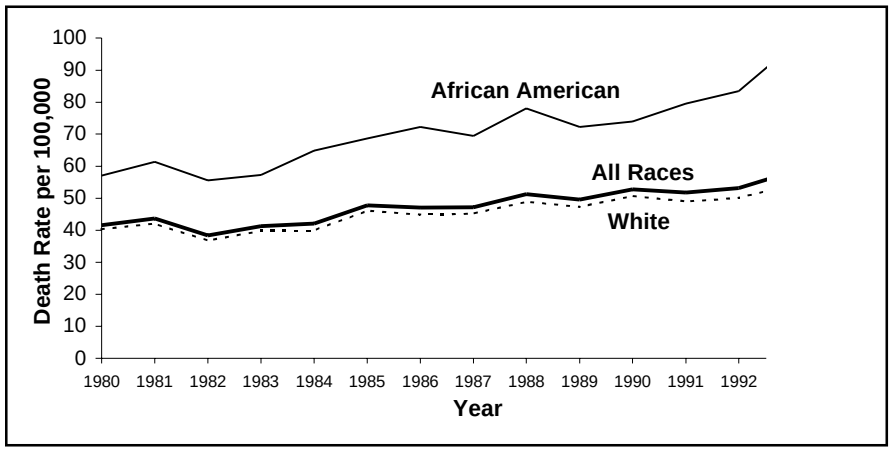

Figure 4. Race-specific age-adjusted infectious disease death rates by year, Missouri, 1980–94.

to national trends for the 1980 to 1992 period. The rate of increase was steepest among people 25–44 years old and largest among the elderly. In Missouri, the upward trend continued for the 1992 to 1995 period.

In Missouri, three causes (pneumonia and influenza, HIV/AIDS, and septicemia) of the top 12 leading causes of death are infectious disease related. In 1980, only pneumonia and influenza ranked in the top 12. During 1995, pneumonia and influenza were the fifth leading cause of death, affecting mainly the elderly. AIDS was the third leading cause of death for Missourians 25–44 years of age in 1995.

Most of the differences in the rate of increase between Missouri and the United States (28 vs. 39 percent) is due to HIV/AIDS. In the United States, when HIV/AIDS deaths listed on the death certificate were subtracted from the total number in which infectious diseases were the underlying cause-of-death, a 22 percent increase remained in the infectious disease death rate between 1980 and 1992.[2] This compares with a 20.1 percent increase in Missouri in the same subset of causes excluding HIV/AIDS.

The findings presented in this report are limited by the validity of the diagnostic information recorded on death certificates.

Infectious diseases increasingly threaten public health and contribute significantly to the escalating costs of health care.[1] Prevention and control of infectious diseases require a variety of public health

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strategies.[2] To reduce the incidence and prevalence of some infectious diseases, the Division of Environmental Health and Communicable Disease Prevention has addressed specific threats, such as HIV/AIDS, TB, sexually transmitted diseases (STD) and vaccine-preventable diseases in its strategic plan. Following are some of the goals included in the plan:

- To create a state-of-the-art disease surveillance system for the early detection of emerging infections, outbreaks and environmental health threats;
- To ensure that all active TB patients are placed on directly observed therapy;
- To increase the number of patients initially treated with four TB medications;
- To increase the number of eligible Missourians who receive all the age-appropriate recommended immunizations;
- To reduce the incidence of vaccine-preventable diseases and support their global eradication;
- To assure that 100 percent of Missourians have access to timely and quality STD/HIV prevention and treatment services;
- To prevent all new STD/HIV infections in the state of Missouri

To accomplish these goals will require collaborations and partnerships with local health departments, federal agencies, public and private laboratories, health care providers and local communities.

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1. Centers for Disease Control and Prevention. Addressing emerging infectious disease threats: A prevention strategy for the United States. Atlanta, GA: US Department of Health and Human Services, Public Health Service, 1994.
2. Pinner RW, Teutsch SM, Simonsen L, et al. Trends in infectious diseases mortality in the United States. JAMA 1996;275:189–93.
3. World Health Organization. Manual of the international statistical classification of diseases, injuries, and causes of death, Based on recommendations of the ninth revision conference, 1975. Genevea, Switzerland: World Health Organization, 1977.

Policy for Perinatal Hepatitis B

The risk of perinatal hepatitis B transmission is very high. Infants born to mothers positive for the hepatitis B surface antigen (HBsAg) have up to a 90 percent chance of acquiring perinatal hepatitis B infections. Of these infants, 85–90 percent will become chronic hepatitis B carriers and more than 25 percent of these chronic carriers will die from cirrhosis and liver cancer. Prenatal screening identifies HBsAg-positive women and allows the immunoprophylaxis of their newborns with hepatitis B immune globulin (HBIG) and hepatitis B (HB) vaccine. This regimen is up to 95 percent effective in preventing the chronic hepatitis B carrier state.

Prenatal Hepatitis B Screening Law

Section 210.030, RSMo requires that all pregnant women be serologically screened for hepatitis B during their first prenatal examination or no later than twenty days after the first examination. HBsAg-positive pregnant women should be reported to the local health authority or the Department of Health within three days of the positive test.

Recommendations

The Department of Health recommends that all pregnant women be serologically screened for HBsAg in accordance with existing Missouri law. Infants born to HBsAg-positive mothers should receive one dose (0.5 ml) of HBIG and the first dose of High-Risk Pediatric HB vaccine within 12 hours of birth and prior to discharge from the hospital. HBIG and HB vaccine can be given concurrently, but must be administered at separate anatomic sites. The second and third doses of High-Risk Pediatric HB vaccine should be administered at ages 1 month and 6 months.

The Bureau of Immunization will provide anti-HBc screening to household/needle-sharing/sexual contacts of HBsAg-positive pregnant women. HBIG and hepatitis B vaccine will be made available to all newborns and, as necessary according to current Centers for Disease Control and Prevention (CDC) guidelines, to all contacts of any HBsAg-positive pregnant woman. The bureau will also provide serologic screening (anti-HBs) at 12 months of age to any newborn of an HBsAg-positive pregnant woman.

For more information, please contact your district immunization representative or the Bureau of Immunization at (573) 751-6133.

Helicobacter pylori

Fact Sheet for Physicians

September 1997

TEAR OUT FOR FUTURE REFERENCE

What is *Helicobacter pylori*?

Helicobacter pylori (*H. pylori*) is a spiral shaped bacterium that is found in the gastric mucus layer or adherent to the epithelial lining of the stomach. *H. pylori* causes more than 90% of duodenal ulcers and more than 80% of gastric ulcers.

Before 1982, when this bacterium was discovered, spicy food, acid, stress and life-style were considered the major causes of ulcers. The majority of patients were given long-term maintenance doses of acid-reducing medications, such as H_2 blockers, without a chance for permanent cure. Since we now know that most ulcers are caused by *H. pylori*, appropriate antibiotic regimens can successfully eradicate the infection in most patients, with complete resolution of mucosal inflammation and a minimal chance for recurrence of ulcers.

How common is *H. pylori* infection?

Approximately two-thirds of the world's population is infected with *H. pylori*. In the United States, *H. pylori* is more prevalent among older adults, African Americans, Hispanics and lower socio-economic groups.

What illnesses does *H. pylori* cause?

Most persons who are infected with *H. pylori* never suffer any symptoms related to the infection; however, *H. pylori* causes chronic active, chronic persistent and atrophic gastritis in adults and children. Infection with *H. pylori* also causes duodenal and gastric ulcers.

Infected persons have a 2- to 6-fold increased risk of developing gastric cancer and mucosal-associated-lymphoid-type (MALT) lymphoma compared with their uninfected counterparts. The role of *H. pylori* in non-ulcer dyspepsia remains unclear.

What are the symptoms of ulcers?

Approximately 25 million Americans suffer from peptic ulcer disease. Each year there are 500,000 to 850,000 new cases of peptic ulcer disease and more than one million ulcer-related hospitalizations.

The most common ulcer symptom is gnawing or burning pain in the epigastrium. This pain typically occurs when the stomach is empty, between meals and in the early morning hours, but it can also occur at other times. It may last from minutes to hours and may be relieved by eating or taking antacids.

Less common ulcer symptoms include nausea, vomiting and loss of appetite. Bleeding can also occur; prolonged bleeding may cause anemia leading to weakness and fatigue. If bleeding is heavy, hematemesis, hematochezia or melena may occur.

Who should be tested and treated for *H. pylori*?

Persons with active gastric or duodenal ulcers or documented history of ulcers should be tested for *H. pylori*, and if found to be infected, they should be treated. To date, there has been no conclusive evidence that treatment of *H. pylori* infection in patients with non-ulcer dyspepsia is warranted.

Testing for and treatment of *H. pylori* infection are recommended following resection of early gastric cancer and for low-grade gastric MALT lymphoma. Retesting after treatment may be prudent for patients with bleeding or otherwise complicated peptic ulcer disease.

Treatment recommendations for children have not been formalized. Pediatric patients who require extensive diagnostic work-up for abdominal symptoms should be evaluated by a specialist.

How is *H. pylori* infection diagnosed?

Several methods may be used to diagnose *H. pylori* infection. Serological tests that measure specific *H. pylori* IgG antibodies can determine if a person has been infected. The sensitivity and specificity of these assays range from 80–95% depending upon the assay used.

Another diagnostic method is the breath test. In this test, the patient is given either ^{13}C or ^{14}C-labeled urea to drink. *H. pylori* metabolizes the urea rapidly, and the labeled carbon is absorbed. This labeled carbon can then be measured as CO_2 in the patient's expired breath to determine whether *H. pylori* is present.

Upper esophagogastroduodenal endoscopy is considered the reference method of diagnosis. During endoscopy, biopsy specimens of the stomach and duodenum are obtained and the diagnosis of *H. pylori* can be made by several methods:

- The biopsy urease test is a colorimetric test based on the ability of *H. pylori* to produce urease; it provides rapid testing at the time of biopsy.
- Histologic identification of organisms is considered the gold standard of diagnostic tests.
- Culture of biopsy specimens for *H. pylori* requires an experienced laboratory and is necessary when antimicrobial susceptibility testing is desired.

What are the treatment regimens used for *H. pylori* eradication?

Therapy for *H. pylori* infection consists of 1–2 weeks of one or two effective antibiotics, such as amoxicillin, tetracycline (not to be used for children <12 years), metronidazole or clarithromycin, plus either ranitidine bismuth citrate, bismuth subsalicylate or a proton pump inhibitor.

Eradication rates ranges from 70–90% depending on the regimen used. Currently, five *H. pylori* treatment regimens are approved by the Food and Drug Administration (FDA); however, several other combinations have been used successfully. See Table 1. Antibiotic resistance and patient noncompliance are the two major reasons for treatment failure.

Table 1. FDA-Approved Treatment Options for *H. pylori*

1. Omeprazole 40 mg QD + Clarithromycin 500 mg TID x 2 weeks, then Omeprazole 20 mg QD x 2 weeks

- OR -

2. Ranitidine bismuth citrate (RBC) 400 mg BID + Clarithromycin 500 mg TID x 2 weeks then RBC 400 mg BID x 2 weeks

- OR -

3. Bismuth subsalicylate (Pepto Bismal®) 525 mg QID + Metronidazole 250 mg QID + Tetracycline 500 mg QID* x 2 weeks + H_2 receptor antagonist therapy as directed x 4 weeks

- OR -

4. Lansoprazole 30 mg BID + Amoxicillin 1 g BID + Clarithromycin 500 mg BID x 14 days

- OR -

5. Lansoprazole 30 mg TID + Amoxicillin 1 g TID x 14 days**

* Although not FDA approved, amoxicillin has been substituted for tetracycline for patients in whom tetracycline is not recommended.

** This dual therapy regimen has restrictive labeling. It is indicated for patients who are either allergic or intolerant to clarithromycin or for infections with known or suspected resistance to clarithromycin.

Are there any long-term consequences of *H. pylori* infection?

Recent studies have shown an association between long-term infection with *H. pylori* and the development of gastric cancer. Gastric cancer is the second most common cancer worldwide; it is most common in countries such as Colombia and China, where *H. pylori* infects over half the population in early childhood. In the United States, where *H. pylori* is less common in young people, gastric cancer rates have decreased since the 1930s.

How do people get infected with *H. pylori*?

It is not known how *H. pylori* is transmitted or why some patients become symptomatic while others do not. The bacteria are most likely spread from person to person through fecal-oral or oral-oral routes. Possible environmental reservoirs include contaminated water sources. Iatrogenic spread through contaminated endoscopes has been documented but can be prevented by proper cleaning of equipment.

What can people do to prevent *H. pylori* infection?

Since the source of *H. pylori* is not yet known, recommendations for avoiding infection have not been made. In general, it is always wise for persons to wash hands thoroughly, to eat food that has been properly prepared and to drink water from a safe, clean source.

What is the Centers for Disease Control and Prevention (CDC) doing to prevent this infection?

CDC, in conjunction with partners in other government agencies, academic institutions and industry, is conducting a national education campaign to inform health care providers and consumers of the link between *H. pylori* and stomach and duodenal ulcers. CDC is also working with partners to study routes of transmission and possible prevention measures, and to establish an antimicrobial resistance surveillance system to monitor the changes in resistance among *H. pylori* strains in the United States.

How can I get more information about *H. pylori*?

1. NIH Consensus Development Conference. *Helicobacter pylori* in peptic ulcer disease. JAMA 1994;272:65–69.
2. Soll, AH. Medical treatment of peptic ulcer disease. Practice guidelines. [Review]. JAMA 1996;275:622–29 [published erratum appears in JAMA 1996 May 1;275:1314].
3. Hunt, RN. *Helicobacter pylori*: from theory to practice. Proceedings of a symposium. Am J Med 1996;100(5A) supplement.
4. The American Gastrointestinal Association, American Digestive Health Foundation, 7910 Woodmont Avenue, 7th floor, Bethesda, MD 20814, Ph: (301) 654-2055, FAX: (301) 654-5920.
5. The National Digestive Diseases Information Clearinghouse, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, 2 Information Way, Bethesda, MD 20892-3570, Ph: (301) 654-3810.

For further information, contact the Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road, MS:CO9, Atlanta, GA 30333.

CDC also has established an *H. pylori* information line for physicians and patients. The toll-free number is

1-888-MY ULCER.

Guide to Public Health Information on the World Wide Web

Consumer Health Information

Aging

http://www.nih.gov/nia

Information from the National Institute on Aging (NIA) regarding a wide range of topics, from specific diseases or health conditions to treatments and research. In addition, specific information from NIA about Alzheimers Disease is available (http://www.cais.com/adear). Information about aging services and care is available from HHS' Administration on Aging (http://www.aoa.dhhs.gov/elderpage.html), and information about Medicare is available from HHS' Health Care Financing Administration (http://www.hcfa. gov).

Cancer

http://cancernet.nci.nih.gov

Provides up-to-date, accurate medical information on cancer. Also contains a directory of genetic counselors, physicians, geneticists and nurses who have expertise in counseling about familial risk and genetic testing for cancer. More cancer information is also available from the National Cancer Institute (http://rex.nci.nih.gov).

Cryptosporidiosis

http://www.cdc.gov/ncidod/diseases/crypto/crypto.htm

This site includes documents designed for the public, HIV-positive individuals, health care providers and public health and water utility officers.

Healthfinder

http://www.healthfinder.gov

A gateway site to help consumers find health and human services information quickly. Healthfinder includes links to more than 1,250 Web sites, including more than 250 federal sites and 1,000 state, local, not-for-profit, university and other consumer health resources. Topics are organized in a subject index.

Immunization

http://www.cdc.gov/nip

Answers frequently-asked questions about childhood immunization, including current recommendations on what immunizations children need and when.

International Travel and Health

http://jupiter.who.ch/programmes/emc/yellowbook/yb_home.htm

The 1997 edition of International Travel and Health–Vaccination Requirements and Health Advice is now accessible as hypertext files in English, Spanish and Japanese.

Mammography

http://www.fda.gov/cdrh/faclist.html

Listing of facilities providing mammography which are certified by the Food and Drug Administration as meeting baseline quality standards. The list is searchable by area or zip code.

Medline

http://www.nlm.nih.gov

The world's most extensive collection of published medical information, coordinated by the National Library of Medicine. Originally designed primarily for health professionals and researchers, MEDLINE is also valuable for students and for those seeking more specific information about health conditions, research and treatment. Free access to MEDLINE was initiated on June 26, 1997. "PubMed," a free on-line service, will provide direct Web links between MEDLINE abstracts and the publishers of full-text articles.

National Institutes of Health Health Information Page

http://www.nih.gov/health

Provides a single access point to the consumer health information resources of the National Institutes of Health (NIH), including the NIH Health Information Index, NIH publications and clearinghouses and the Combined Health Information Database.

Substance Abuse

http://www.health.org

This site provides information about substance abuse treatment and prevention. Background on research is available from the National Institute on Drug Abuse (http://www.nida.nih.gov) and the National Institute on Alcohol Abuse and Alcoholism (http://www.niaaa.nih.gov).

Travelers Information

http://www.cdc.gov/travel

Provides current CDC information regarding important vaccine requirements and recommendations, malaria risk and drug information, food and water precautions, outbreak information and other prevention practices for travelers. Includes links to CDC's Vessel Sanitation Program for sanitation inspections on international cruise ships.

Treatment Findings

http://www.ahcpr.gov

Department of Health and Human Services (HHS) Agency for Health Care Policy and Research provides data to help consumers make informed health care decisions about specific health conditions, prescriptions and other treatment issues. The site offers research results on what has been found to work best.

Public Health Resources

Guide to Clinical Preventive Services, Second Edition

http://odphp.osophs.dhhs.gov/pubs/guidecps

This publication reviews the scientific evidence behind various clinical preventive services, summarizes current recommendations of leading groups and provides current recommendations from the U.S. Preventive Services Task Force, an independent expert advisory panel to the U.S. Public Health Service. Printed copies are available from the Superintendent of Documents, U.S. Government Printing Office at (202) 512-1800, cost $35.00.

HIV/AIDS Prevention Home Page

http://www.cdc.gov/nchstp/hiv_aids/dhap.htm

CDC's site for HIV and AIDS information. Other sources are AIDS Education Global Information System (ÆGIS) at http://www.aegis.com and HIV Insite at http://hivinsite.ucsf.edu.

Hospital Infections Program

http://www.cdc.gov/ncidod/hip/hip.htm

CDC's Hospital Infections Program (HIP) is dedicated to assisting the Pulbic Health Service, state and local health departments, hospitals and professional organizations worldwide in the prevention and control of nosocomial infections.

Morbidity & Mortality Weekly Report

http://www.cdc.gov/epo/mmwr/mmwr.html

This weekly CDC publication reports on such public health topics as emerging infectious diseases, immunizations, environmental health, chronic disease issues, etc. You can subscribe to receive this publication electronically each week.

Prevention Guidelines Database

http://www.cdc.gov/diseases/diseases.html#prev

This is a compendium of all official guidelines and recommendations published by CDC for the prevention of diseases, injuries and disabilities. It contains more than 400 control and prevention documents on a wide range of topics including AIDS, vaccine-preventable diseases, TB, sexually transmitted diseases, surveillance, emergency preparedness, suicide, diabetes, birth defects and physical activity.

STD Prevention Home Page

http://www.cdc.gov/nchstp/dstd/dstdp.html

CDC's site for information on sexually transmitted diseases. Other sources are the American Social Health Association at http://sunsite.unc.edu/ASHA and St Louis STD/HIV Prevention Training Center at http://www.umsl.edu/services/itc/std_ptc.html.

Tracking Emerging Diseases Worldwide:ProMED
http://www.fas.org/promed
ProMED is a project of the Federation of American Scientists to promote the establishment of a global Program for Monitoring Emerging Diseases. This communication system on Internet includes worldwide information on outbreaks of diseases of animals and plants as well as human illness. This site includes a digest of current information on worldwide disease surveillance, current outbreak reports from WHO, global disease trends, emerging animal diseases and diseases of plants of agricultural interest. Several links to related sites are also offered. Users may also be able to subscribe to regular ProMED mail.

Weekly Epidemiological Record
http://www.who.ch/wer/wer_home.htm
This publication serves as an essential instrument for the rapid and accurate dissemination of epidemiological information on cases and outbreaks of diseases under the International Health Regulations, other communicable diseases of public health importance, including the newly emerging or re-emerging infections, non-communicable diseases and other health problems.

Federal Sites

Administration on Aging
http://www.aoa.dhhs.gov
Administration for Children and Families
http://www.acf.dhhs.gov
Agency for Health Care Policy and Research
http://www.ahcpr.gov
CDC Travel Information
http://www.cdc.gov/travel
Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov
Department of Health and Human Services (HHS)
http://www.hhs.gov
Environmental Protection Agency
http://www.epa.gov
Emerging Infectious Diseases (EID)
http://www.cdc.gov/ncidod/EID
FedWorld Information Network
http://www.fedworld.gov
Food and Drug Administration
http://www.fda.gov
Health Care Financing Administration (HCFA) (Medicare and Medicaid Agency)
http:/www.hcfa.gov
Health Resources and Services Administration (HRSA)
http://www.hrsa.dhhs.gov
Indian Health Service (IHS)
http://www.ihs.gov
National Cancer Institute
http://rex.nci.nih.gov
National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
http://www.cdc.gov/nccdphp
National Center of Health Statistics
http://www.cdc.gov/nchswww/nchshome. htm
National Electronic Telecommunications System for Surveillance (NETSS)
http://www. cdc. gov/epo/mmwr/other/netss/netss. html
National Immunization Program
http://www.cdc.gov/nip
National Institute of Allergy and Infectious Diseases
http://www.niaid.hih.gov
National Institute on Aging
http://www.nih.gov/nia
National Institute on Alcohol Abuse and Alcoholism
http://www.niaaa.nih.gov
National Institute on Drug Abuse
http://www.nida.nih.gov
National Institutes of Health (NIH)
http://www.nih.gov
National Network of Libraries of Medicine
http://www.nnlm.nlm.nih.gov
Substance Abuse and Mental Health Administration (SAMHSA)
http://www.health.org
U.S. National Library of Medicine (NLM)
http://www.nlm.nih.gov
U.S. Public Health Service
http://www.dhhs.gov/phs

Nonprofit Organization Sites

American Cancer Association
http://www.cancer.org
American College of Obstetricians and Gynecologists
http://www.acog.com
American Lung Association
http://www.lungusa.org
American Medical Association
http://www.ama-assn.org
American Medical Informatics Association
http://amia.org
American Public Health Association (APHA)
http://www.apha.org
American Veterinary Medical Association (AVMA)
http://www.avma.org
Joint Commission of Accreditation of Healthcare Organizations
http ://www.jcaho.org
Missouri State Medical Association
http://www.msma.org
Outbreak
http://www.outbreak.org/cgi-unreg/dynaserve.exe/index.html
PLL ONLINE—the WHO Library and Health Literature Services
http://www-pll.who.ch/programmes/pll/hlt/hlt_index.html
Telemedicine Information Exchange
http://tie.telemed.org/TIEmap.html

Private Organization Sites

Annual Review of Public Health
http://www.AnnualReviews.org/ari
Medscape: (CME credit available)
http://www5.medscape.com
Physicians' Choice
http://www.mdchoice.com
Physicians' Online Network
http://www.po.com/welcome.html

State Sites

Missouri Department of Health
http://www.health.state.mo.us
Missouri Department of Social Services
http://www.state.mo.us/dss

University and College Sites

Kirksville College of Osteopathic Medicine
http://www.kcom.edu
St. Louis University
http://www.slu.edu
University of Missouri-Columbia
http://www.missouri.edu
University of Missouri-Kansas City
http://www.umkc.edu
University of Health Sciences College of Osteopathic Medicine
http://www.uhs.edu
Washington University
http://www.wustl.edu

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Missouri Osteoporosis Prevention and Education Program (MOPEP)

Virginia Beatty
Bureau of Chronic Disease Control

The Missouri legislature appropriated $80,260 in general revenue funds, including two staff positions, to the Missouri Department of Health's FY97 budget to support the 1995 legislated osteoporosis program (192.640, RSMo). This legislation gave the department the ability to establish and maintain an osteoporosis prevention and education program. The program is designed to promote public awareness regarding the causes of osteoporosis, options for prevention and the value of early detection and possible treatments, including the benefits and risks of those treatments.

The osteoporosis program is located within the Bureau of Chronic Disease Control, Division of Chronic Disease Prevention and Health Promotion. Staff were hired in December 1996. A coalition consisting of physicians, health administrators, nutritionists, nurses, educators and lay persons from across the state of Missouri was established to assist in the planning, development and implementation of education and outreach activities.

The program's mission is to implement and maintain an education program to increase awareness and improve prevention activities among Missourians. Program staff collaborate with the Missouri Arthritis Program; health care professionals; community, state and national organizations; and local health agencies to establish and implement strategies. To achieve the mission, program staff utilize strategic planning and evaluation, and have identified several goals which are to:

- increase prevention and education activities;
- identify and disseminate educational resources;
- promote and/or facilitate professional education programs; and
- define the burden of osteoporosis in Missouri.

Missouri residents can call (800) 316-0935 to obtain information regarding local service locations and to obtain educational materials. Recorded messages are taken 24 hours a day, seven days a week.

For additional information about this program, contact Virginia Beatty, Program Manager at (573) 876-3207 or beattv@mail.health. state.mo.us.

Osteoporosis Facts

National Data

- Twenty-five million Americans, of which 20 million are women, have or are at risk for osteoporosis.
- Estimates show that nearly 40 percent of postmenopausal women, after age 50, will suffer an osteoporotic fracture during their remaining lifetime.
- Osteoporosis is responsible for approximately 1.3 million broken bones each year in the United States.
- Osteoporosis costs Americans $10 billion a year.

Missouri Data

- Between 1995 and 2015, 112,000 Missouri women, age 45 and over, are expected to suffer hip fractures.
- The annual cost to Missouri's health care system from fractures will rise from $119 million in 1995 to $399 million in 2015.

Source: National Osteoporosis Foundation, Burden of Fractures Model

Prevention of Cold-Related Illness

When winter temperatures drop significantly below normal, staying warm and safe can become a challenge. During the past ten winters, 135 Missourians died from cold-related illness. A little over half of these individuals were age 65 and over. During the winter of 1996–97, 14 deaths due to cold-related causes were reported; seven of those deaths were in individuals age 65 and over.

An individual gains body heat from food and muscular work, and loses it through convection, conduction, radiation and sweating to maintain a constant body temperature of approximately 98.6°F. The body's first response to a cold environment is constriction of the blood vessels of the skin; that reduces heat loss from the surface of the skin by decreasing peripheral blood flow; and/or shivering, that generates heat by increasing the body's metabolic rate.

Older adults often make less body heat because of a slower metabolism and less physical activity. They are often homebound and bedfast, and have less perception of the cold. Frequently, they are trying to reduce expenditures on heating and may gradually get so cold that their body temperature falls below a critical level, and even at temperatures well above the freezing mark, persons may die of hypothermia. If you are more than 65 years of age, check the temperature in your home often, especially during severely cold weather. All Missourians should check on elderly friends and neighbors frequently to ensure that their homes are adequately heated.

Infants less than one year old should never sleep in a cold room because infants lose body heat more easily than adults; and unlike adults, infants are not able to make additional body heat by shivering. Provide warm clothing and a blanket for infants and try to maintain a warm indoor temperature. If the temperature cannot be maintained, make temporary arrangements to stay elsewhere. In an emergency, you can keep an infant warm using your own body heat. If you must sleep, take precautions to prevent rolling on the baby. Pillows and other soft bedding can also present a risk of smothering; remove them from the area near the infant.

Exposure to cold temperatures, whether indoors or outdoors, can cause serious or life-threatening health problems. The most common cold-related problems are hypothermia and frostbite.

Hypothermia

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up the body's stored energy. The result is hypothermia, or abnormally low body temperature. Body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Hypothermia is most likely to occur at very cold temperatures, but can occur even at cool temperatures (above 40°F) if a person becomes chilled from rain, sweat or submersion in cold water.

Victims of hypothermia are most often:

- elderly people with inadequate food, clothing, or heating;
- babies sleeping in cold bedrooms;
- people who remain outdoors for long periods–the homeless, hikers, hunters, etc.

Warnings signs of hypothermia:

Adults	Infants
shivering	bright red, cold skin
confusion	very low energy
memory loss	
drowsiness	
exhaustion	
fumbling hands	
slurred speech	

What to Do

If you notice any of these signs, take the person's temperature. If it is below 95°F, the situation is an emergency–get medical attention immediately.

If medical care is not available immediately, begin warming the person, as follows:

- Get the victim into a warm room or shelter.
- If the victim has on any wet clothing, remove it.
- Warm the center of the body first—chest, neck, head, and groin—using an electric blanket, if available. Or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels or sheets.
- Warm beverages can help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person.
- After body temperature has increased, keep the person dry and wrapped in a warm blanket, including the head and neck.
- Get medical attention as soon as possible.

A person with severe hypothermia may be unconscious and may not seem to have a pulse or to be breathing. In this case, handle the victim gently, and get emergency assistance immediately. Even if the victim appears dead, CPR should be provided. CPR should continue while the victim is being warmed, until the victim responds or medical aid becomes available. In some cases, hypothermia victims who appear to be dead have been successfully resuscitated.

Frostbite

Frostbite is an injury to the body that is caused by actual freezing of skin and sometimes underlying body tissues. Frostbite causes a loss of feeling and color in affected areas. It most often affects the nose, ears, cheeks, chin, fingers

or toes. Frostbite can permanently damage the body, and severe cases can lead to amputation. The risk of frostbite is increased in people with reduced blood circulation and among people who are not dressed properly for extremely cold temperatures.

Recognizing Frostbite

At the first signs of redness or pain in any skin area, get out of the cold or protect any exposed skin—frostbite may be beginning. Any of the following signs may indicate frostbite:

- discoloration of the skin
- skin that feels unusually firm or waxy
- numbness

A victim is often unaware of frostbite until someone else points it out because the frozen tissues are numb.

What to Do

If you detect symptoms of frostbite, seek medical care. Because frostbite and hypothermia both result from exposure, first determine whether the victim also shows signs of hypothermia, as described previously. Hypothermia is a more serious medical condition and requires emergency medical assistance.

If there is frostbite but no sign of hypothermia and immediate medical care is not available, proceed as follows:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes—to do so increases the damage.
- Immerse the affected area in warm—not hot—water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Or, warm the affected area using body heat. For example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub the frostbitten area with snow or massage it at all—to do so will cause more damage.
- Don't use a heating pad, heat lamp or the heat of a stove, fireplace or radiator for warming. Affected areas are numb and can be easily burned.

These procedures are not substitutes for proper medical care. Hypothermia is a medical emergency and frostbite should be evaluated by a health care provider. It is a good idea to take a first aid and emergency resuscitation (CPR) course to prepare for cold-weather health problems. Knowing what to do is an important part of protecting your health and the health of others.

Major Risk Factors for Cold-Related Illness

In addition to the cold environment, other major risk factors contributing to cold-related illness include:

- Inadequate clothing or wet clothing (the actual effects of cold on the body depend on how well the skin is insulated from the environment);
- Drug use or certain medications may inhibit the body's response to cold or impair judgment (examples include beta blocks, neuroleptic drugs, alcohol and cigarettes);
- Diseases or conditions that limit activity, reduce awareness or reduce the normal flow of blood, such as a cold, diabetes, atherosclerosis, hypothyroidism, stroke, severe arthritis, Parkinson's disease or memory disorders, may increase risk;
- Gender: male death rates due to cold exposure are greater than the rates for females; perhaps because of inherent risk-taking activities, body fat composition, or other physiological differences;
- Susceptibility increases with age;
- Exhaustion or immobilization, especially through injury or entrapment.

Environmental Conditions

Environmental conditions that cause cold-related stresses are low temperature, cool high winds, dampness, and cold water. Wind chill (temperature and wind velocity) is an important factor to evaluate when working outside. For example, when the actual air temperature of the wind is 40°F and its velocity is 35 mph, the exposed skin would perceive these conditions as if the equivalent still air temperature were 11°F. A dangerous situation of rapid heat loss may arise for any individual exposed to high winds and cold temperatures.

Eat and Drink Wisely

Eating well-balanced meals will help you stay warmer. Do not drink alcoholic beverages—they cause your body to lose heat more rapidly. Instead, drink warm, sweet beverages such as hot chocolate or sweetened coffee or tea to help maintain your body temperature. If you have any dietary restrictions, ask your doctor.

Avoid Exertion

Cold weather puts an extra strain on the heart. If you have heart disease or high blood pressure, follow your doctor's advice about shoveling snow or performing other hard work in the cold. Otherwise, if you have to do heavy outdoor chores, dress warmly and work slowly. Remember, your body is already working hard just to stay warm, so don't overdo it.

Taking preventive action is the best defense against having to deal with extreme cold-weather conditions. By observing safety precautions during times of extremely cold weather, the risk of cold-related health problems will be reduced.

Additional information on cold-related illness can be found on the Department of Health homepage at http://www.health.state.mo.us/cgi-bin/uncgi/PreventionandWellness.

SOURCES:

Extreme Heat/Extreme Cold A Prevention Guide to Promote Your Personal Health and Safety, Centers for Disease Control and Prevention, 1996.

Preventing Cold-Related Illnesses in Agricultural Workers, Rutgers Cooperative Extension, Rutgers, the State University of New Jersey, 1993.

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Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

LATE BREAKERS

☞ In the United States, up to 25 million people have peptic ulcer disease resulting in substantial morbidity and costs. Despite extensive scientific data linking peptic ulcer disease to *Helicobacter pylori*, studies indicate that many health care providers and consumers are still not aware of the relationship. Many people with ulcers have not yet received appropriate therapy. The Centers for Disease Control and Prevention has planned a *H. pylori* and peptic ulcer disease education campaign that was launched during National Infection Control Week, October 19–25, 1997. As part of that effort, we have reprinted CDC's *H. pylori* Fact Sheet for Physicians on pages 5–6 of this issue.

☞ The Missouri Department of Health in cooperation with the Missouri State Emergency Management Agency (SEMA) has been selected to conduct a limited pilot testing of the pandemic influenza control planning guide developed by a steering group for the Centers for Disease Control and Prevention (CDC)/Council of State and Territorial Epidemiologists (CSTE) project "Development of Guidelines and Model State Plans for Influenza Pandemic Preparedness." A design team consisting of professionals from a variety of agencies and disciplines will plan the test pilot to be called FLUEX'98. FLUEX'98 will be a two-day orientation and tabletop exercise held at the State Emergency Operations Center in February 1998. For more information on this exercise, contact Georgia Storm in the Bureau of Immunization at (573) 751-6133.